

**A new species of *Neoperla* (Insecta: Plecoptera: Perlidae)  
from Mississippi**

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*Abstract.*—*Neoperla coxi*, a new species, is described from male, female, egg and nymphal stages, and a holotype male is designated. Males differ from all known Nearctic *Neoperla* in having most of the aedeagal tube spinulose. The new species is apparently endemic to southwest Mississippi.

During a recent survey to determine the status of *Alloperla natchez* Surdick & Stark, 1980, and *Haploperla chukcho* (Surdick & Stark 1980), two chloroperlid stoneflies endemic to southwest Mississippi, specimens of an undescribed *Neoperla* were collected near the type localities of these species. A few additional specimens were found among unidentified material in my collection and from P. K. Lago of the University of Mississippi, and a larger series was obtained from the Mississippi Entomological Museum (MEM), Mississippi State University. The material from the MEM was collected by malaise and blacklight traps at three sites in the Homochitto National Forest with the support of National Science Foundation grant DEB-9200856 awarded to Richard Brown.

Recent study of extensive *Neoperla* collections from throughout Mississippi and Alabama (Stark & Harris 1986, Stark & Lentz 1988.) suggests the new species is endemic to the Homochitto National Forest and surrounding areas of southwest Mississippi and perhaps Louisiana.

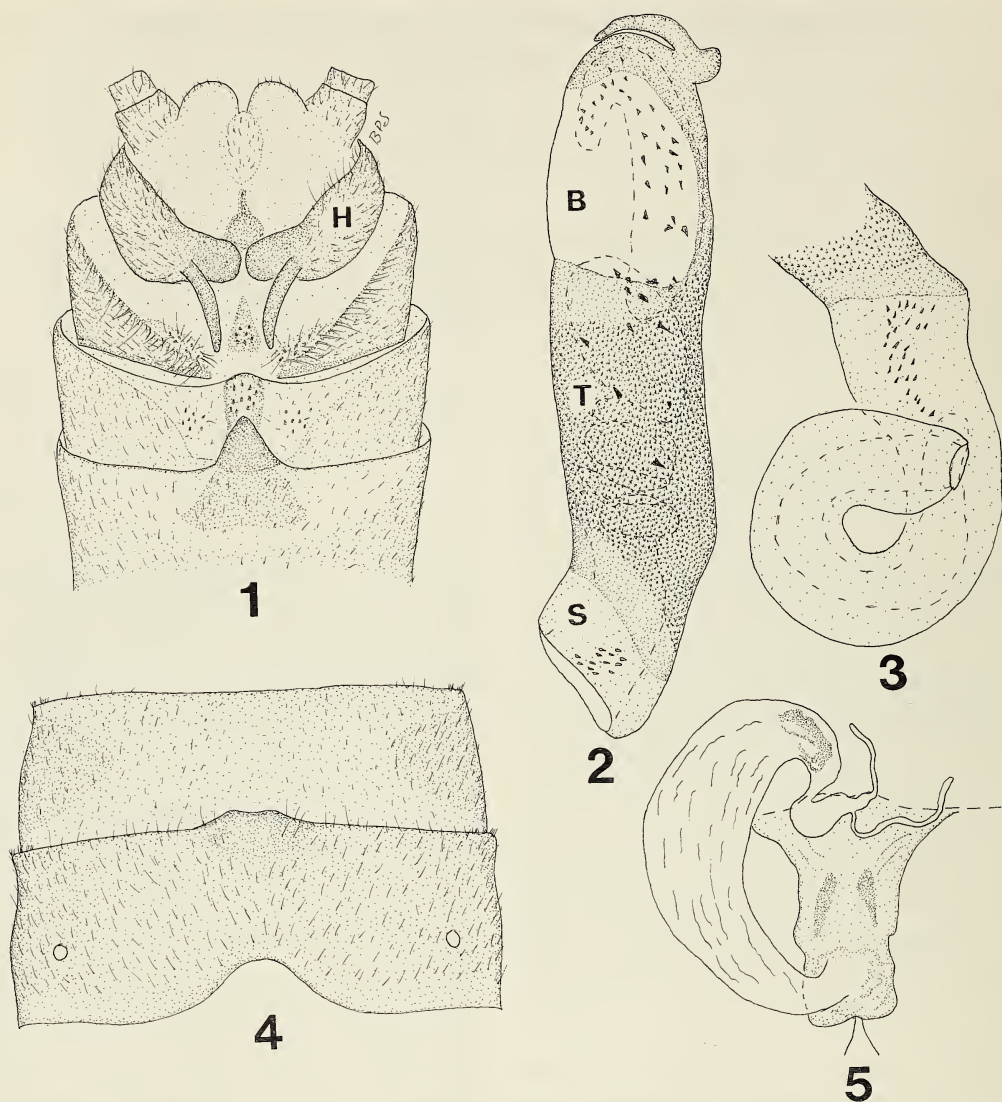
The holotype is placed in the National Museum of Natural History (USNM) on indefinite loan from the Mississippi Entomological Museum. Paratypes are in the collections of the author (BPS), the University of Mississippi (UM) and the Mississippi Entomological Museum. Terminology follows Stark & Lentz (1988).

*Neoperla coxi*, new species  
Figs. 1-8

*Male.*—Forewing length 8-10 mm. General color yellow patterned with brown. Wings amber brown with darker veins; costa and subcosta pale. Legs yellow except for diffuse dorsal brown spot near apex of femora and a narrow longitudinal brown band extending from femur for  $\frac{2}{3}$  of outer tibial margin. Cerci pale. Process of tergum 7 triangular, upturned in lateral aspect and armed ventrally with 4-5 prominent sensilla basiconica. Mesal sclerite of tergum 8 with lateral margins parallel for most of length. Hemiterga slightly tapered apically, finger-like process of hemitergum slender and bent slightly ventrolaterad (Fig. 1). Tube of aedeagus slightly sinuate, 3.1 times as long as bulb; conspicuous spicules cover most of tube (Fig. 2). Sac sparsely armed in basal half by a pair of basolateral patches of slender spines (Figs. 2-3); apical armature of scattered, thickened spines (Fig. 2), mid section unarmed (Figs. 2-3).

*Female.*—Forewing length 11-13 mm. Posterior margin of sternum 8 produced into a small rounded to slightly bilobed tab (Fig. 4). Spermathecal stalk membranous except for small apical section lined with fine brown setae (Fig. 5); stalk grotesquely inflated in some specimens.

*Egg.*—Length 0.31 mm; width 0.19 mm. Sessile collar surrounded by a single irreg-



Figs. 1-5. *Neoperla coxi* male and female genitalia. 1, Male terminalia; 2, Aedeagal tube, lateral; 3, Aedeagus, sac partially extruded, apical armature not shown; 4, Female sterna 8 and 9; 5, Vagina and spermathecal stalk, dorsal. T = tube; S = sac; B = bulb; H = hemitergum.

ular row of reticulation. Striae relatively straight, narrowed at each end and separated by wide sulci. Sulci with 4-5 irregular aeropyle rows. Micropyles in sulci near equator (Figs. 7-8).

*Mature nymph.*—Body length 7-9 mm. General color yellow patterned with brown. Anterior of frons covered with a broad transverse brown pigment band; posterior margin of band sinuate, anterior margin

straight. Ocellar area covered with a small diffuse brown spot. Pronotal disk ringed by a sub-marginal pigment band. Each abdominal tergum with a narrow transverse pigment band (Fig. 6).

*Etymology.*—I am pleased to name this species for my friend and colleague, Prentiss G. Cox, in recognition of his interest and support of research at Mississippi College.

*Types.*—Holotype ♂ and 104 ♂ and 48 ♀

paratypes from Middleton Creek, Franklin County, Mississippi, T5N R4E Sec 31S, 1 Jun 1992, T. Schiefer, R. Fontenot (USNM, MEM). Additional paratypes, all from Mississippi: Claiborne Co: Little Sand Creek, Rocky Springs, 14 May 1977, B. Stark, 1 ♀ reared (BPS). Sand Creek tributary, 0.5 mi W Hunt Road, 18 May 1978, B. Stark, 1 ♀ (BPS). Same location, 3 Jun 1986, B. Stark, J. Ballard, 1 ♀ (BPS). Copiah Co: Brushy Creek, Hwy 27, 0.5 mi E Hopewell, 20 May 1978, B. Stark, 1 ♂, 1 ♀ reared (BPS). Franklin Co: Clear Springs Lake, 4.5 mi SW Meadville, 30 May 1988, P. K. Lago, 1 ♂ (UM). Middleton Creek, T5N R4E Sec 31S, 9–15 Jun 1992, T. Schiefer, R. Fontenot, 6 ♂ (MEM). Same data except 29 Jun 1992, 4 ♂ (MEM). Same data except 30 Jun–6 Jul 1992, 1 ♂ (MEM). McGehee Creek tributary, T6N R4E Sec 26SW, 1 Jun 1992, T. Schiefer, R. Fontenot, 88 ♂, 35 ♀ (MEM). Porter Creek, T5N R4E Sec 8NW, 1 Jun 1992, T. Schiefer, R. Fontenot, 6 ♂, 3 ♀ (MEM). Hinds Co: Sand Creek, Hunt Road, 24 Apr 1992, B. Stark, G. Gee, D. Kelly, 2 ♂ (BPS).

*Discussion.*—This description of *N. coxi* brings to 14 the number of Nearctic *Neoperla* species. Using keys in Stark & Lentz (1988), males of *N. coxi* are identified as *N. stewarti* Stark & Baumann, 1978, or *N. osage* Stark & Lentz, 1988, and females are identified as *N. stewarti*. *N. coxi* males differ from all known Nearctic species in having most of the aedeagal tube spinulose (Fig. 2) and they also differ from both *N. osage* and *N. stewarti* in lacking prominent aedeagal armature in the basal half of the sac (Figs. 2–3). Separation of unassociated females of *N. coxi* from *N. stewarti* is more difficult, but the subgenital plate is slightly longer and the spermathecal stalk lining is less developed in *N. coxi*; females of other Nearctic *Neoperla* differ from *N. coxi* in having most of the spermathecal stalk lined with brown setae. Nymphs are virtually identical in color pattern to *N. robisoni* Poulton & Stewart, 1986 (Ernst et al. 1986, Poulton & Stewart 1991), with perhaps a less extensive ocellar

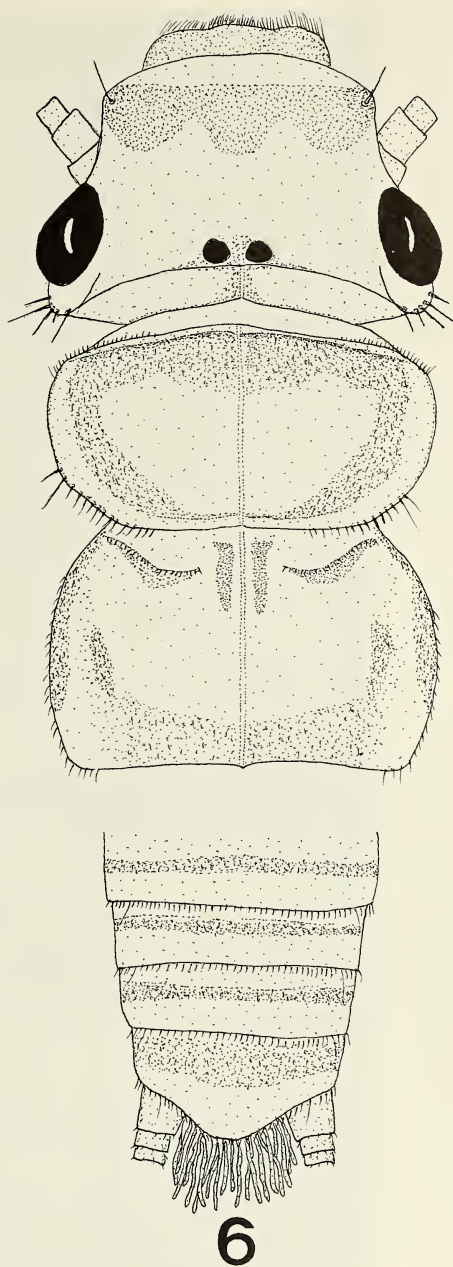
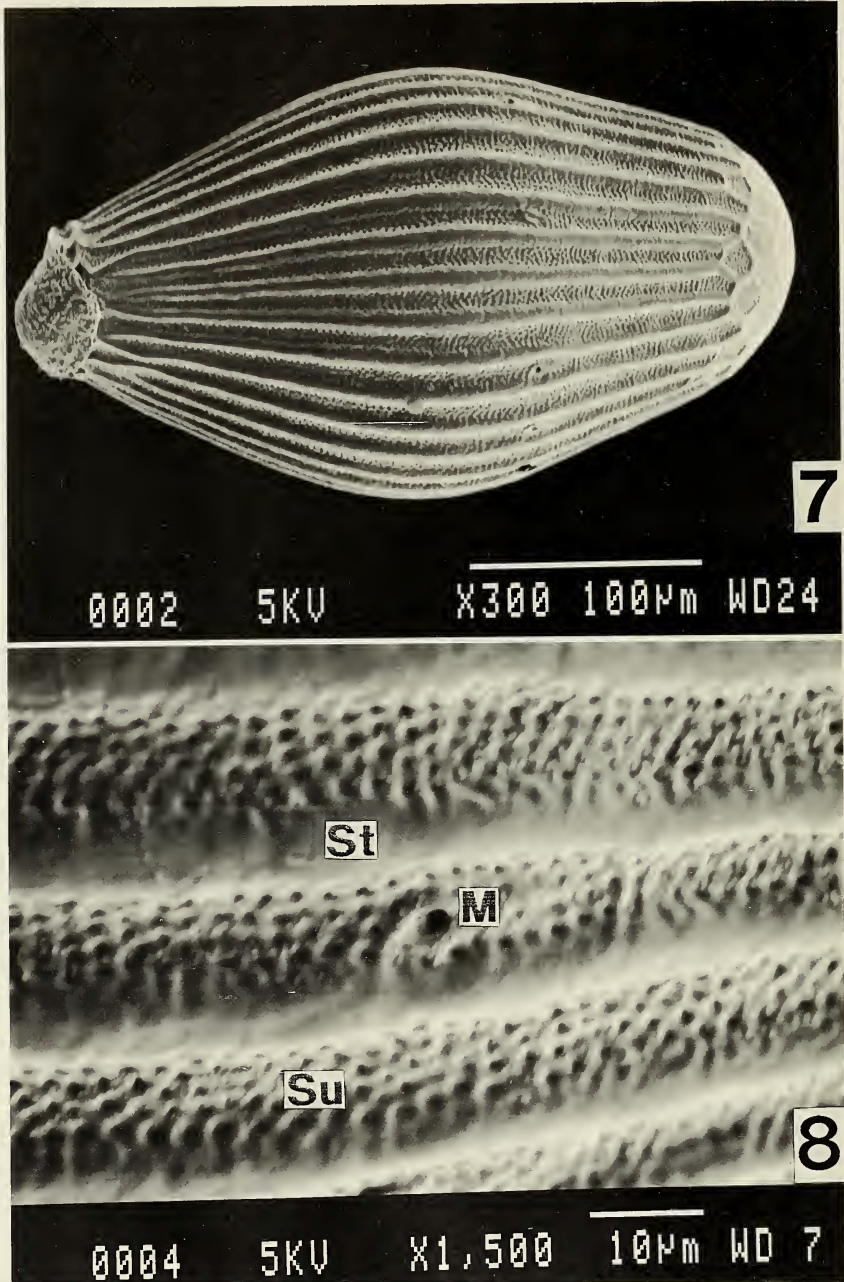


Fig. 6. *Neoperla coxi* nymphal habitus.

pigment spot in *N. coxi*. The egg collar and posterior pole of *N. coxi* bear less prominent reticulations than do the eggs of *N. stewarti*.

Six *Neoperla* species are now known from Mississippi but only *N. robisoni* and *N. carlsoni* Stark & Baumann, 1978, have been



Figs. 7-8. *Neoperla coxi* eggs. 7, Entire egg, lateral; 8, Detail of surface. St = striae, Su = sulci, M = micropyle.

collected from the same streams with *N. coxi*. At the Middleton Creek site in Franklin County, personnel of the Mississippi Entomological Museum operated a malaise trap continuously from 2 June through 31

August of 1992, and blacklight collections were made 1 June, 29 June and 31 August. Early collections through 8 June contained exclusively *N. coxi*; *N. robisoni* males first appeared by 9 June and males of the 2 spe-

cies were collected together through 6 July. Thereafter, no males of *N. coxi* were taken but a single female was present in a mid-August malaise trap. *N. robisoni* males were collected through July and August and by late August, the first *N. carlsoni* specimens were taken. Although elsewhere in Mississippi, *N. carlsoni* has been collected as early as 22 June, at the Middleton Creek site a temporal emergence sequence which begins with *N. coxi* and ends with *N. carlsoni* may occur.

### Acknowledgments

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